## **CLAIMS**

1. Compounds which are represented by the following general formula [1]

[in which A stands for a group of the following formula  $[a_0]$  or  $[b_0]$ 

Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R1 stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R<sup>2</sup> and R<sup>3</sup>, or R<sup>4</sup> and R<sup>5</sup>, may together stand for, independently of each other, optionally substituted trimethylene, propenylene,

tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R7, R7 standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R60 stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R61 and R71 each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; X stands for carbonyl or methylene; Y stands for nitrogen or methine; and Q stands for anion]

or salts thereof.

2. The compounds according to Claim 1, in which A is a group expressed by the formula  $[a_0]$ 

$$R^{60}$$
  $[a_0]$ .

3. The compounds according to Claim 1, in which A is a group expressed by the formula  $[b_0]$ 

$$\begin{array}{ccc}
Q^{-} & R^{61} \\
& R^{71} & [b_0]
\end{array}$$

- 4. The compounds according to Claim 1, in which  $Ar^1$ ,  $Ar^2$  and  $Ar^3$  each independently stands for phenyl which is optionally substituted with halogen or lower alkyl; n is 1 or 2; s is 1; and  $R^1$  is hydrogen.
- 5. The compounds according to Claim 4, which are represented by the general formula [I-a]:

$$R^{8} \xrightarrow{CH_{2}-C-N-CH-C-N-(CH_{2})_{2}-C-N-CH_{2}-A^{1}} \qquad [I-a]$$

[wherein  $A^1$  stands for a group represented by the formula  $[a_1]$  or  $[b_1]$ 

R<sup>2a</sup> and R<sup>3a</sup> each independently stands for hydrogen, or optionally substituted lower alkyl, the substituent being selected from hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R8 stands for hydrogen, halogen or lower alkyl;  $\mathrm{R}^{60}$  stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R61 and R<sup>71</sup> each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $\mathbf{R}^{61}$  and  $\mathbf{R}^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; and Q stands for anion].

6. The compounds according to Claim 4, which are represented by the general formula [1-b]:

[wherein Ala stands for a group of the formula [a1]

R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; and R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl.

7. The compounds according to Claim 4, which are represented by the general formula [I-c]:

$$R^{8}$$
 $CH_{2}$ 
 $CH_{2}$ 

[in which  $A^1$  stands for a group represented by the formula  $[a_1]$  or  $[b_1]$ 

R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R<sup>61</sup> and R<sup>71</sup> each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl,

cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or R<sup>61</sup> and R<sup>71</sup> may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; and Q stands for anion].

8. The compounds according to Claim 4, which are represented by the general formula [I-d]

$$R^{8} \longrightarrow CH_{2}-C-N-(CH_{2})_{6}-C-N-CH_{2}-A^{1a}$$

$$R^{8} \longrightarrow CH_{2}-C-N-(CH_{2})_{6}$$

[in which A<sup>1a</sup> stands for a group of the formula [a<sub>1</sub>]

$$R^{60}$$
 [a<sub>1</sub>];

R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl.

9. The compounds according to Claim 4, which are represented by the general formula [I-e]

$$R^{8} \xrightarrow{R^{e1}} CH_{2}^{e2} C - N - CH - C - N - CH - C - N - (CH_{2})_{n1} - A^{1}$$
 [I-e]

[in which  $A^1$  stands for a group represented by the formula  $[a_1]$  or  $[b_1]$ 

n1 stands for 1 or 2;  $R^{e1}$ ,  $R^{e2}$ ,  $R^{e3}$  and  $R^{e4}$  each independently stands for hydrogen, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R7; or Re1 and Re2 together signify oxo group; R7 stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R8 stands for hydrogen, halogen or lower alkyl; R60 stands for hydrogen, C1-C10 alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R<sup>61</sup> and R<sup>71</sup> each independently stands for C1-C10 alkyl, lower alkenyl,

cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; and  $\bar{Q}$  stands for anion].

- 10. The compounds according to Claim 9, in which Rel is hydrogen or hydroxyl, and all of Rel, Rel and Rel are hydrogen.
- 11. The compounds according to Claim 1, 2, 4, 5, 6, 7, 8, 9 or 10, in which  $R^{60}$  is hydrogen,  $C_1$ - $C_{10}$  alkyl, cycloalkyl or cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl.
- 12. The compounds according to Claim 11, in which said  $C_1$ - $C_{10}$  alkyl as  $R^{60}$  is methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, 2-methylbutyl, hexyl, 2-methylpentyl, heptyl, octyl or decyl.
- 13. The compounds according to Claim 11, in which said cycloalkyl group as  $R^{60}$  is cyclopentyl or cyclohexyl.
- 14. The compounds according to Claim 11, in which said cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl as R<sup>60</sup> is cyclopropylmethyl, cyclobutylmethyl, 2-(1-methylcyclopropyl)ethyl, cyclopentylmethyl, (2,2-dimethylcyclopentyl)methyl, 1-cyclopentylethyl, cyclohexylmethyl or 1-cyclohexylethyl.
- 15. The compounds according to Claim 1, 3, 4, 5, 7 or 9, in which  $R^{61}$  and  $R^{71}$  each independently is  $C_1$ - $C_{10}$  alkyl, lower alkenyl or cycloalkyl-lower alkyl whose ring portion may be substituted with

lower alkyl.

- 16. The compounds according to Claim 15, in which  $R^{61}$  and  $R^{71}$  each independently is  $C_1$ - $C_6$  alkyl.
- 17. The compounds according to Claim 16, in which  $R^{61}$  and  $R^{71}$  each independently is methyl, ethyl, propyl or 2-methylbutyl.
- 18. The compounds according to Claim 15, in which both  $R^{61}$  and  $R^{71}$  are 2-propenyl or cyclopropylmethyl; or  $R^{61}$  is cyclohexylmethyl and  $R^{71}$  is methyl.
- 19. The compounds according to Claim 1, 3, 4, 5, 7 or 9, in which  $R^{61}$  and  $R^{71}$  together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2,3-epoxytetramethylene, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy.
- 20. A process for producing a compound represented by the general formula [I-1]:

[in which Aa stands for a group of the formula [a0]

$$R^{60}$$
[a<sub>0</sub>];

Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independtly stands for optionally substituted phenyl, the substituent being selected from the

group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; R1 stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R2 and R3, or R4 and R5, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R<sup>7</sup>, R<sup>7</sup> standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R60 stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; and k, m, n, s, X and Y have later defined significations

or salts thereof, which comprises reacting carboxylic acid of the general formula [II]:

$$Ar^{1p} \xrightarrow{Ar^{2p}} CH \xrightarrow{R^{1p}} O$$

$$Ar^{3p} CH \xrightarrow{C-OH} [II]$$

[in which Ar<sup>1p</sup>, Ar<sup>2p</sup> and Ar<sup>3p</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower alkoxy and di-lower alkylcarbamoyl and optionally protected hydroxyl, carbamoyl and lower alkylcarbamoyl; and R<sup>1p</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl, optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups]

or salt or reactive derivative thereof with a compound of the general formula [III]:

[in which  $A^{ap}$  stands for a group of the formula  $[a_{op}]$ 

$$N$$
 $R^{60p}$ 
 $[a_{0p}];$ 

k means 0 or 1; m, n and s each independently means 0, 1 or 2;  $R^{2p}$ ,  $R^{3p}$ ,  $R^{4p}$  and  $R^{5p}$  each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkyl- carbamoyl and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups, or  $R^{2p}$  and  $R^{3p}$ , or  $R^{4p}$  and  $R^{5p}$ , together form, each independently of the other pair,

optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene, the substituent being selected from the group consisting of lower alkoxy, lower alkanoyloxy, di-lower alkylamino, lower alkoxycarbonyl, di-lower alkylcarbamoyl, a group represented by -R7p and optionally protected oxo, hydroxyl, amino, lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>7p</sup> stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and lower alkoxycarbonyl, and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R60p stands for imino-protecting group, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring potion being optionally substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; X stands for carbonyl or methylene; and Y stands for nitrogen or methine

or a salt thereof to form a compound represented by the general formula [IV-1]

[in which A<sup>ap</sup>, Ar<sup>1p</sup>, Ar<sup>2p</sup>, Ar<sup>3p</sup>, k, m, n, R<sup>1p</sup>, R<sup>2p</sup>, R<sup>3p</sup>, R<sup>4p</sup>, R<sup>5p</sup>, X and Y have the above significations]
or a salt thereof, and if necessary removing the protective group(s).

21. A process for producing a compound represented by the general formula [1-3]:

[in which Aba signifies a group expressed by the formula [boa]

$$R^{61b}$$
 $R^{71a}$  [b<sub>0a</sub>];

Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; R1 stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R2,  ${
m R^3},~{
m R^4}$  and  ${
m R^5}$  each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or  $R^2$  and  $R^3$ , or  $R^4$  and  $R^5$ , may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl,

imidazolyl and a group represented by  $-R^7$ ,  $R^7$  standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; Q stands for anion; and k, m, n, s,  $R^{61b}$ ,  $R^{71a}$ , X and Y have the later defined significationsl

which comprises reacting a compound represented by the general formula [VI-2]:

$$R^{71a}-L^2$$
 [VI-2]

[in which  $L^2$  signifies a leaving group;  $R^{71a}$  signifies  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl]

or a salt thereof with a compound of the general formula [IV-1b]:

 $\label{eq:ab} \mbox{[in which $A^{ab}$ signifies a group represented by the formula } \mbox{[$a_{ob}$]}$ 

Ar<sup>1p</sup>, Ar<sup>2p</sup> and Ar<sup>3p</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower alkoxy and di-lower alkylcarbamoyl and optionally protected

hydroxyl, carbamoyl and lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1p</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl, optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>2p</sup>, R<sup>3p</sup>, R<sup>4p</sup> and R<sup>5p</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups, or R<sup>2p</sup> and R<sup>3p</sup>, or R<sup>4p</sup> and R<sup>5p</sup>, together form, each independently of the other pair, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene, the substituent being selected from the group consisting of lower alkoxy, lower alkanoyloxy, di-lower alkylamino, lower alkoxycarbonyl, di-lower alkylcarbamoyl, a group represented by  $-R^{7p}$  and optionally protected oxo, hydroxyl, amino, lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>7p</sup> stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and lower alkoxycarbonyl, and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>61b</sup> signifies C<sub>1</sub>·C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyllower alkyl or aralkyl; X stands for carbonyl or methylene; and Y stands for nitrogen or methine

or salt thereof, to form a compound represented by the general formula [IV-2]:

[in which Z̄ signifies anion;  $Ar^{1p}$ ,  $Ar^{2p}$ ,  $Ar^{3p}$ , k, m, n, s,  $R^{1p}$ ,  $R^{2p}$ ,  $R^{3p}$ ,  $R^{4p}$ ,  $R^{5p}$ ,  $R^{61b}$ ,  $R^{71a}$ , X and Y have the earlier defined significations]

and if necessary removing the protective group(s) and/or exchanging the anion.

22. A process for producing a compound represented by the general formula [1-4]:

[in which Abb signifies a group expressed by the formula [bob]:

Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; R<sup>1</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from

the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R2, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R2 and R3, or R4 and R5, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R7, R7 standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkyl-carbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R71b signifies optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; Q stands for anion; and k, m, n, s, X and Y have the later defined significations

which comprises reacting a compound represented by the general formula [VII]:

$$L^{3}-R^{71bp}-L^{4}$$
 [VII]

[in which L³ and L⁴ each independently signifies a leaving

group; and R<sup>71bp</sup> signifies optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2,3-epoxytetramethylene, the substituent being selected from the group consisting of lower alkyl, lower alkoxy, and optionally protected oxo and hydroxyl] or a salt thereof with a compound of a general formula [IV-1a]

[in which  $A^{aa}$  signifies a group represented by the formula  $[a_{0a}]$ 

Ar<sup>1p</sup>, Ar<sup>2p</sup> and Ar<sup>3p</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower alkoxy and di-lower alkylcarbamoyl and optionally protected hydroxyl, carbamoyl and lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1p</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl, optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>2p</sup>, R<sup>3p</sup>, R<sup>4p</sup> and R<sup>5p</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and optionally protected hydroxyl. amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups, or R<sup>2p</sup> and R<sup>3p</sup>, or R<sup>4p</sup> and R<sup>5p</sup>, together form, each

independently of the other pair, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene, the substituent being selected from the group consisting of lower alkoxy, lower alkanoyloxy, di-lower alkylamino, lower alkoxycarbonyl, di-lower alkylcarbamoyl, a group represented by  $-R^{7p}$  and optionally protected oxo, hydroxyl, amino, lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>7p</sup> stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and lower alkoxycarbonyl, and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; X stands for carbonyl or methylene and Y stands for nitrogen or methine

or a salt thereof, to form a compound of the general formula [IV-3]

[in which Z signifies anion; Ar<sup>1p</sup>, Ar<sup>2p</sup>, Ar<sup>3p</sup>, k, m, n, s, R<sup>1p</sup>, R<sup>2p</sup>, R<sup>3p</sup>, R<sup>4p</sup>, R<sup>5p</sup>, R<sup>71bp</sup>, X and Y have the earlier defined significations]

and if necessary removing protective group(s) and/or exchanging the anion.

23. Treating agents for diseases associated with muscarinic M<sub>3</sub> receptors, which contain as the active ingredient the compounds represented by the general formula [I]

[in which A stands for a group of the following formula  $[a_0]$  or  $[b_0]$ 

Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R1 stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R2 and R3, or R4 and R5, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino,

lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R7, R7 standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R60 stands for hydrogen. C1-C10 alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R<sup>61</sup> and R<sup>71</sup> each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or R<sup>61</sup> and R<sup>71</sup> may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; X stands for carbonyl or methylene; Y stands for nitrogen or methine; and Q stands for anion]

or salts thereof.

Treating agents for chronic obstructive pulmonary diseases, chronic bronchitis, asthma, chronic respiratory tract obstruction, fibroid lung, pulmonary emphysema and rhinitis; irritable bowel syndrome, convulsive colitis, gastroduodental ulcer, convulsion or hyperanakinesia of digestive tract, diverticulitis and pain accompanying contraction of smooth muscles of the digestive system; urinary incontinence, urgency and pollakiuria in nervous pollakiuria, neurogenic bladder, nocturnal enuresis, unstable bladder, cystospasm and chronic cystisis; and motion sickness, which agents contain as the active ingredient the compounds represented by the general formula [I]

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[in which A stands for a group of the following formula  $[a_0]$  or  $[b_0]$ 

Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R1 stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R2 and R3, or R4 and R5, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino. lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino,

lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R7, R7 standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl;  $R^{60}$  stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R61 and R71 each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or R<sup>61</sup> and R<sup>71</sup> may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; X stands for carbonyl or methylene; Y stands for nitrogen or methine; and Q stands for anion]

or salts thereof.